INSTRUCTION MANUAL

ENCODER TOTALIZED PULSE INPUT MODULE, 1 point
(NPN / PNP / voltage pulse input)

MODEL **R8-RPAT1**

BEFORE USE ....

Thank you for choosing us. Before use, please check contents of the package you received as outlined below.
If you have any problems or questions with the product, please contact our sales office or representatives.

■ PACKAGE INCLUDES:

Encoder totalized pulse input module .....(1)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

POINTS OF CAUTION

■ CONFORMITY WITH EU DIRECTIVES

- The equipment must be mounted inside a panel.
- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures* to ensure the CE conformity.
  * For example, installation of noise filters and clamp filters for the power source, input and output connected to the unit, etc.

■ GENERAL PRECAUTIONS

- Before you remove or mount the unit, turn off the power supply and input signal for safety.
- Do not touch the connector while the power is supplied. Static electricity may cause a malfunction.
- Switches on the side of the module can be set for maintenance only while the power supply is off. Do not access them while the power is supplied.

■ ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

■ WIRING

- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

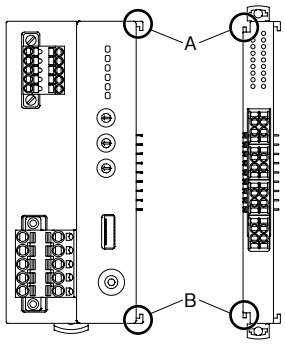
■ AND ....

- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

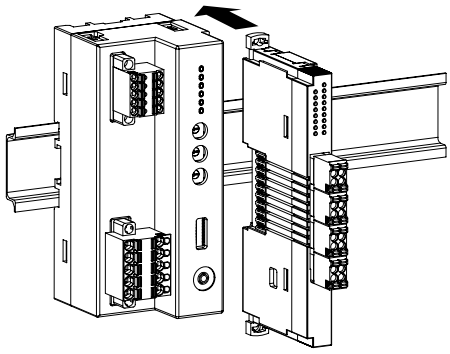
INSTALLATION

■ HOW TO MOUNT THE MODULE ON DIN RAIL

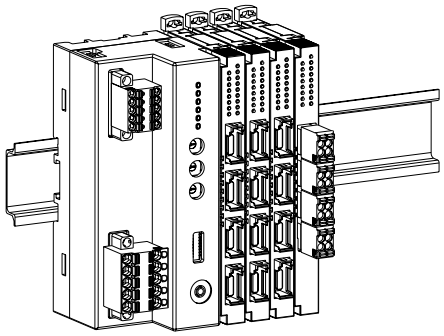
• I/O Module



Confirm that the locking clamps of the I/O module are set. Insert the module in parallel to the next one while aligning the grooves of both modules (A & B in the above figure). Maintain it perpendicularly to the rail.

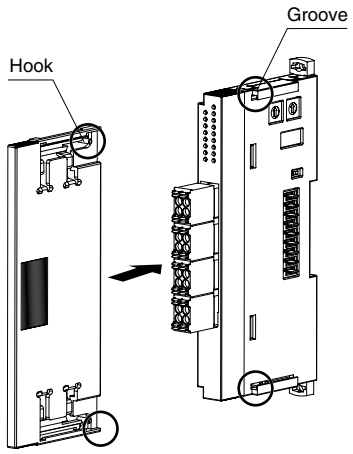


More I/O modules can be added in the same manner.

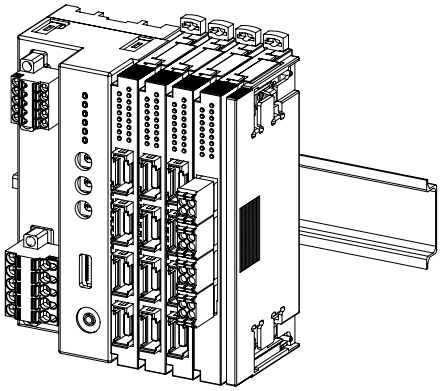


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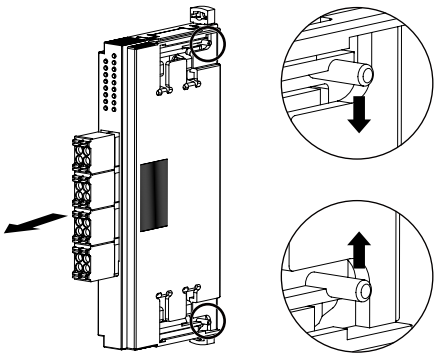
• Protective Cover



The protective cover is to be attached over the connected I/O module at the right end.
Align the hooks on the cover with the grooves of the module and slide it straight until the hooks are latched.

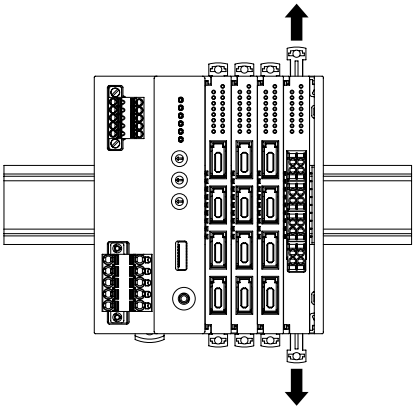


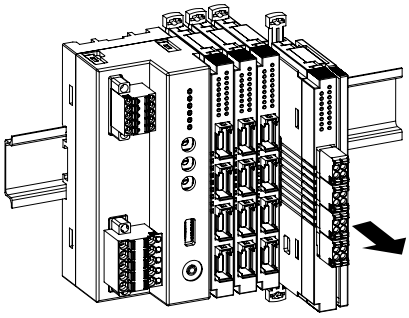
When removing the cover, pull it out while squeezing the hooks inward.



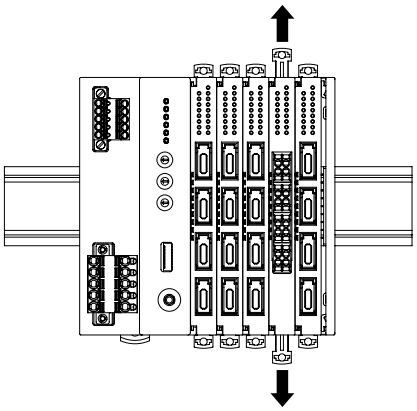
■ HOW TO UNMOUNT THE MODULE ON DIN RAIL

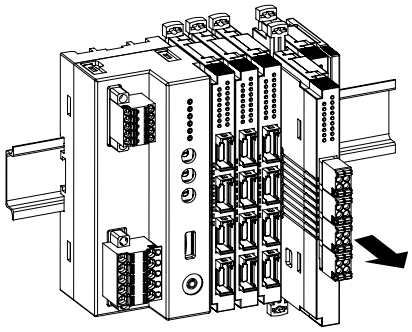
Release the locking clamps and pull out straight the module.





• Removing an intermediate module





Caution !

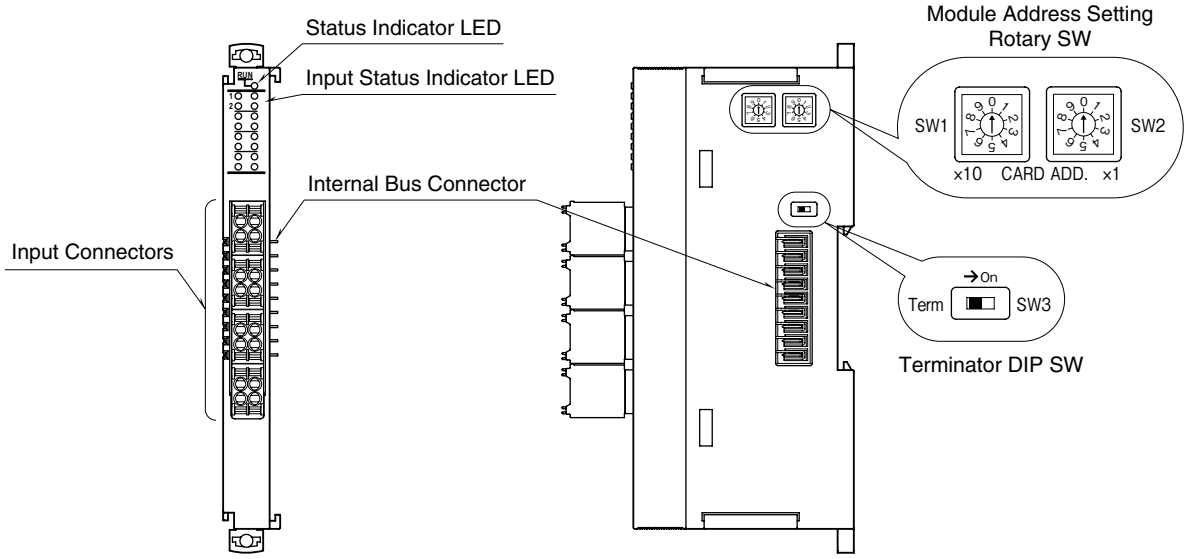
1) Be careful not to hurt your hand by pointed edges of the internal bus connector.
2) I/O modules cannot hold tightly on the DIN rail by themselves without power/network module.

   Secure them to the position if necessary by using DIN rail end plates.

COMPONENT IDENTIFICATION

■ FRONT VIEW

■ SIDE VIEW

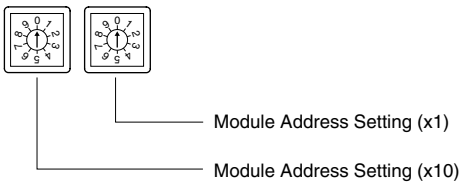


■ INDICATOR LED

ID	OPERATION	FUNCTION
Status	OFF	Stopping
	Green ON	Valid host communication
	Green Blinking	Reading/writing configuration
	Red ON	Setting error
	Red Blinking	Parameter error
Input Status 1	Green ON	Forward rotation pulse input is in progress.
Input Status 2	Green ON	Reverse rotation pulse input is in progress.

■ MODULE ADDRESS: SW1, 2

The left switch determines the tenth place digit, while the right one does the ones place digit of the module address. Address is selected between 0 to 30.
(Factory setting: 0)

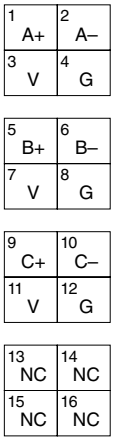


■ TERMINATOR DIP SW: SW3

TERMINATOR DIP SW	SW3
Without (*)	OFF
With	ON

(*) Factory setting

■ INPUT CONNECTOR ASSIGNMENT



PIN No.	ID	FUNCTION
1	A+	Phase A pulse input
2	A-	Phase A pulse input
3	V	Excitation supply (+)
4	G	Excitation supply (–)
5	B+	Phase B pulse input
6	B-	Phase B pulse input
7	V	Excitation supply (+)
8	G	Excitation supply (–)
9	C+	Reset signal input
10	C-	Reset signal input
11	V	Excitation supply (+)
12	G	Excitation supply (–)
13	NC	No Connection
14	NC	No Connection
15	NC	No Connection
16	NC	No Connection

PC CONFIGURATOR

The following parameter items can be configured with PC Configurator Software (model: R8CFG).
Refer to the users manual of the software for detailed operations.

■ CHANNEL INDIVIDUAL SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
Count mode	Two phase pulse (non-multiplication) Two phase pulse (double-multiplication) Two phase pulse (quad-multiplication) Pulse + direction Add + subtract pulse	Two phase pulse (non-multiplication)
Function of reset signal input	Disabled Reset Preset Capture	Disabled
Detecting mode of reset signal input	Low => High edge High => Low edge High level Low level	Low => High edge
Pulse count preset value	-1,000,000,000 to +1,000,000,000	0

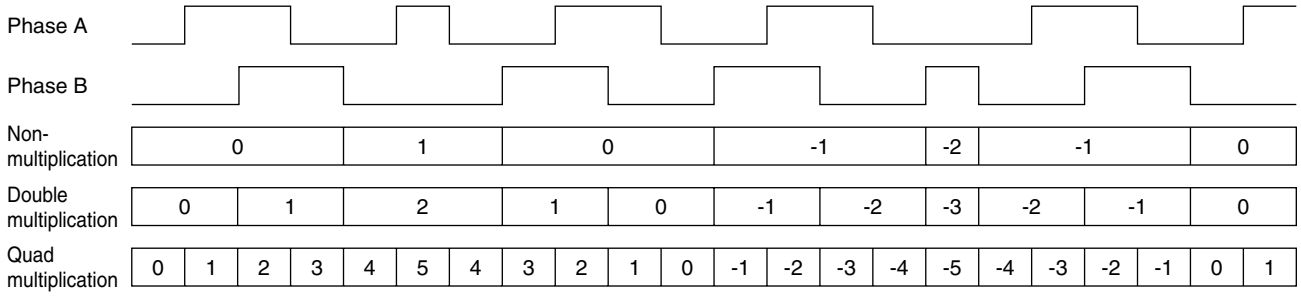
■ CHANNEL BATCH SETTING

PARAMETER	SETTING RANGE	DEFAULT SETTING
Loss of internal bus communication detection time	0.0 to 99.9 (sec.)	1.0 (sec.)

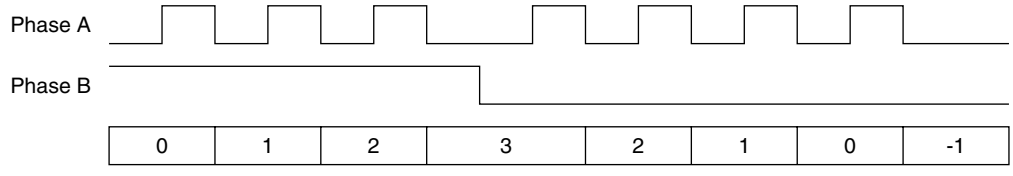
Note: Programming by the PC Configurator is available via the Power/Network Module.

COUNT MODE

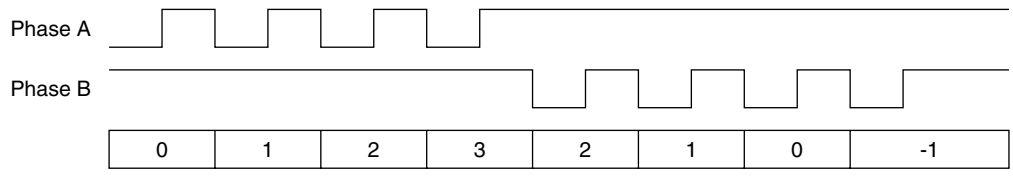
■ TWO-PHASE PULSE



■ PULSE + DIRECTION



■ ADD + SUBTRACT PULSE



Note: When add + subtract pulse is used, the side to which no pulse is input must be High.
Select the input signal specifications appropriately according to the input device to be used.

RESET SIGNAL INPUT

A signal from the reset input terminal can be used to reset, preset, or capture (hold) the pulse count value.

RESET INPUT SETTING	OPERATION
Reset	The pulse count value is cleared to 0.
Preset	The pulse count value is changed to the value set as the preset value.
Capture	The pulse data at the time of detecting the reset input is captured and the latest captured value is set to the monitor value of the communication data.

COMMUNICATION

This module uses 2 module addresses and reads/writes 4 words of I/O data.

■ INPUT DATA

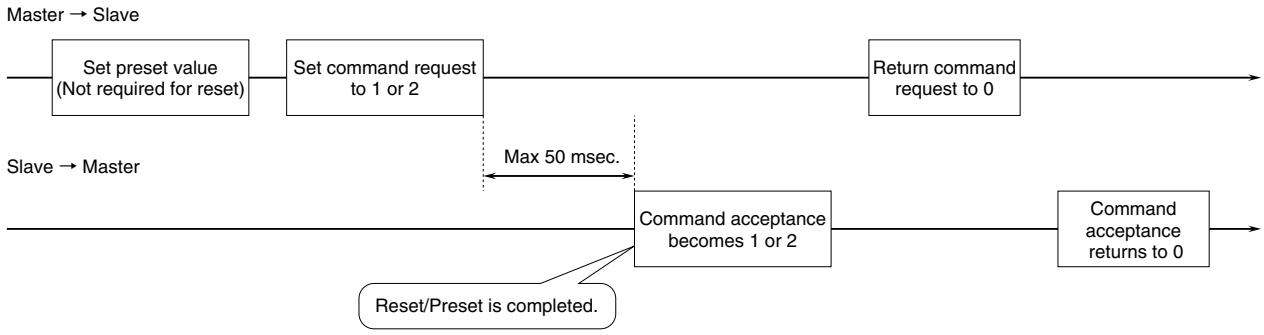
OFFSET	NAME	NOTE
+0	Monitor value (lower 16 bits)	The instantaneous value or captured value of the pulse count is read out. (When the reset input setting is "capture", the captured value is read out.)
+1	Monitor value (upper 16 bits)	
+2	Command acceptance	0: Normal 1: Accepting reset 2: Accepting preset
+3	0	–

■ OUTPUT DATA

OFFSET	NAME	NOTE
+0	Preset value (lower 16 bits)	The pulse count value is changed to this value by the preset request.
+1	Preset value (upper 16 bits)	
+2	Command request	0: Normal 1: Requesting reset 2: Requesting preset
+3	0	–

■ RESET/PRESET COMMAND EXECUTION PROCEDURE BY COMMUNICATION

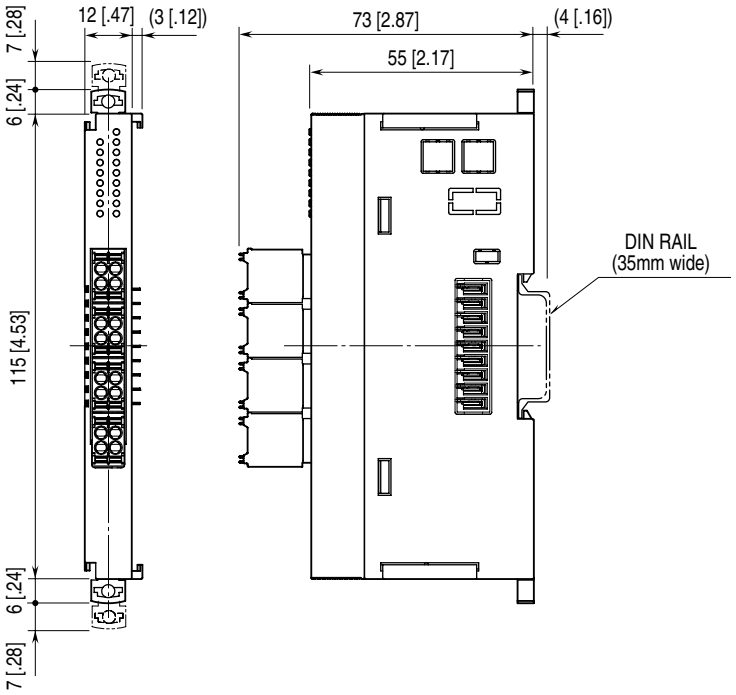
To execute a reset or preset of the pulse count value by communication, follow the procedure below.
When a pulse input occurs after the reset or preset is completed but before the command request is returned to 0, the pulse count value increases or decreases according to the input.



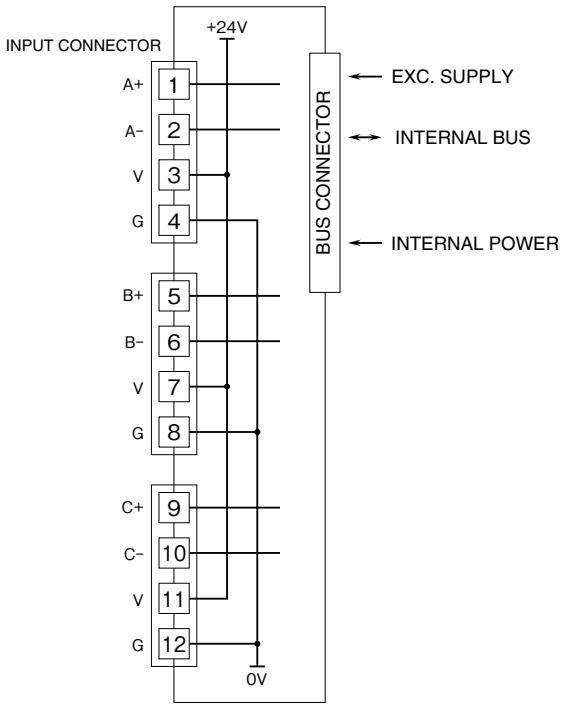
TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

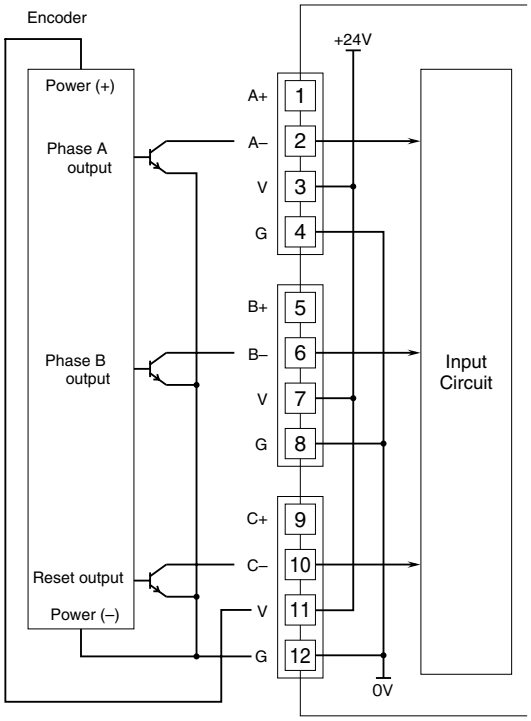
■ EXTERNAL DIMENSIONS unit: mm [inch]



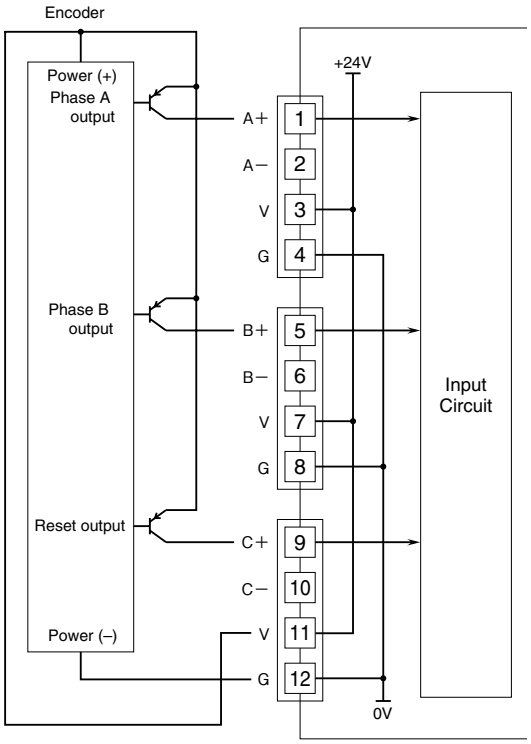
■ CONNECTION DIAGRAM



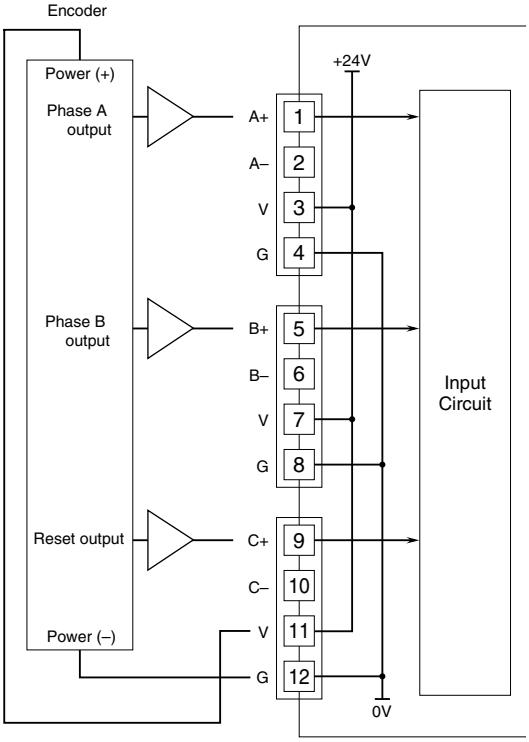
■ **INPUT CIRCUIT (NPN INPUT)**



■ **INPUT CIRCUIT (PNP INPUT)**



■ **INPUT CIRCUIT (VOLTAGE PULSE INPUT)**



WIRING INSTRUCTIONS

■ **SEPARABLE TENSION CLAMP TERMINAL**

Unit side connector: MG's product
Cable side connector: DFMC1,5/2-ST-3,5
(Phoenix Contact)
(included in the package)
Applicable wire size: 0.2 - 1.5 mm²
Stripped length: 10 mm
Recommended solderless terminal

- AI0,25-10YE 0.25 mm² (Phoenix Contact)
- AI0,34-10TQ 0.34 mm² (Phoenix Contact)
- AI0,5-10WH 0.5 mm² (Phoenix Contact)
- AI0,75-10GY 0.75 mm² (Phoenix Contact)
- A1-10 1.0 mm² (Phoenix Contact)
- A1,5-10 1.5 mm² (Phoenix Contact)